

FRIDBERG, D.I.

Clinical characteristics of adiposity of cerebral genesis.  
Probl. endok. i gorm. 11 no.2:3-8 Mr-Apr '65. (MIRA 13:7)

1. Vsesoyuznyy institut eksperimental'noy endokrinologii (direktor -  
prof. Ye.A.Vasyukova), Moskva.

FRIDBERG, G.I., red.

[Concise annotated bibliography of Russian periodical literature on automation and remote control; published during 1956 and 1957]  
Kratkii annotirovannyi ukazatel' otechestvennoi periodicheskoi literatury po avtomatike i telemekhanike za 1956-1957 gg. Moskva, 1958. 3 v. (MIRA 12:11)

1. Akademiya nauk SSSR. Institut nauchnoy informatsii.  
(Bibliography--Automation) (Bibliography--Remote control)

IVANOV, I.T., kandidat tekhnicheskikh nauk, otvetstvennyy redaktor;  
ANTONOV, K.K., redaktor; VOLZHENSKIY, A.V., redaktor; GORNOV, V.N.,  
redaktor; KUZNETSOV, G.F., redaktor; PEVNER, I.V., inzhener,  
redaktor; ROTERT, P.P.; FRIDBERG, G.V., redaktor; PECHKOVSKAYA,  
T.V., tekhnicheskiy redaktor

[Skyscraper designs; experience in design and construction] Konstruk-  
tsii vysoknykh zdaniy; iz opyta proektirovaniya i vozvedeniya. Red.  
kollegiya I.T.Ivanov, K.K.Antonov, A.V.Volzhenskii i dr. Moskva,  
Gos. izd-vo lit-ry po stroitel'stvu i arkhitekture, 1952. 103 p.  
[Microfilm] (MLRA 7:10)

1. Chlen-korrespondent Akademii arkhitektury SSSR (for Antonov,  
Volzhenskiy, Gornov, Kuznetsov, Rotert) 2. Akademiya arkhitektury  
SSSR, Moscow, Institut stroitel'noy tekhniki.  
(Skyscrapers)  
(Architecture--Designs and plans)

FRIDBERG, G.V.

STRAMENTOV, Andrey Yevger'yevich, doktor tekhnicheskikh nauk, professor;  
BAKUTIS, V.E., kandidat tekhnicheskikh nauk, dotsent, redaktor;  
KUZNETSOV, A.I., arkhitekt, redaktor; FRIDBERG, G.V., inzhener,  
redaktor; USTRUGOVA, N.L., arkhitekt, redaktor; PERSON, M.N.,  
tekhnicheskii redaktor

[Engineering problems in city planning] Inzhenernye voprosy plani-  
rovki gorodov. Moskva, Gos. izd-vo lit-ry po stroit. i arkhit.,  
1955. 361 p. (MLBA 8:6)  
(Municipal engineering) (City planning)

ZALESSKAYA, L.S., kand.arkh.; ALEKSANDROVA, V.D., arkh.; SHEVARIKOV, V.A.,  
red.; DYURNBAUM, N.S., red. [deceased]; KOLESHNIKOV, A.I., red.;  
DOMSHLAK, I.P., red.; BALAKSHINA, Ye.S., arkhitektor, red.;  
FRIDBERG, G.V., inzh., red.; BRUSINA, L.N., tekhn.red.

[Manual for architects] Spravochnik arkhitektora. Red.V.A.  
Shkvarikov i dr. Moskva, Gos.izd-vo lit-ry po stroit., arkh. i  
stroit.materialam. Vol.3., pt.2. [Landscaping of cities] Oze-  
lenenie gorodov. Sost. L.S.Zalesskaya i V.D.Aleksandrova. 1960.  
463 p. (MIRA 13:9)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut grado-  
stroitel'stva i rayonnoy planirovki.  
(Landscape gardening)

**Mycalex.** N. P. Bogoroditski and I. D. Fridberg, Russ. 50,549, Feb. 28, 1937. Mycalex, an elec. insulator, is prepd. with a binder contg. a mixt. of  $\text{BaO}$ ,  $\text{Na}_2\text{O}$  and  $\text{H}_2\text{O}$ , in the approx. proportions 20:24:56.

acid which affects and confuses the polarimetric detm.  
of sugar in the product. Frank Marsh

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p>19</p> <p>Dielectric losses in inorganic glasses at radio frequencies. N. Bogoroditski and I. Fridberg. Tech. Phys. U. S. S. R. 4, 707-10(1937).—From the elec. viewpoint the best of known glasses is fused quartz. Closest to quartz in elec. properties, but still much inferior to it, are nonalk. glasses. Glasses contg. considerable amts. of heavy oxides and small quantities of alk. oxides show dielec. losses approaching those of non-alk. glasses but at high temps. they show ohmic losses. Silicic glasses contg. oxides of K, Na either alone or together and with small amts. of heavy oxides have high structural losses. A. A. Vernon</p>																			
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<p>10000 00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20</p>										<p>21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40</p>									

13

the hygroscopicity of solid dielectrics N. P. Bogovoditskii and I. D. Fridberg, *J. Tech. Phys.* (U. S. S. R.) 7, 1202 (1937) (*Chem. Zentr.* 1938, II, 1186; cf. *C. A.* 32, 2901). The vol. hygroscopicity of solid tech. dielectrics is detd. by the presence of pores independently of the polarity of the material. The absorption of water is only slowed down or accelerated by the polarity but its magnitude is not affected. The dielec. losses shown by certain mixts. were investigated in relation to the time of immersion in water or the drying time. Among such mixts. were paraffin-styrene, styrene-S, colophony-styrene, colophony-naphthalene, styrene-marble, etc. Different types of porosity can be differentiated depending upon whether the dimensions of the pores are of the order of magnitude of water mols. (submicroscopic porosity) or larger than these (microscopic porosity) or whether coarse pores are present (macroscopic porosity). In dielectrics of submicroscopic porosity the absorption of water and drying take place slowly; in those of microscopic or macroscopic porosity these processes take place rapidly. Only in dielectrics with microscopic porosity can the hygroscopic properties be eliminated by impregnating with solid insulating materials M. G. Moore



FRIDBERG, I. [D.]  
SA

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286. Dielectric Losses in Inorganic Glasses at Radio Frequencies. N. Bogorodichiy and I. Fridberg. *Techn. Phys., U.S.S.R.* 4. pp. 707-710, 1937. *In English.*—The dielectric properties of inorganic glasses were determined at a frequency of 1 Mc./sec. and over a temperature range 20°–340° C. The glasses, which were all silica glasses, were divided into three groups according to their chemical composition. The first group contained potassium and sodium oxides with little or no lead or barium oxide, the second group contained considerable amounts of lead or barium oxide with small quantities of alkaline oxides, whilst the third group were non-alkaline glasses containing principally hafnium and boric oxides. The third group possessed the best, and the first group the worst, dielectric properties. Within the first group glasses containing potassium oxides have superior dielectric properties to those containing sodium oxides. E. R.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



13

Moistureproof Micalex. N. P. Bogdanovskii and I. I. Pridberg. *Izvest. Elektrom. Sluzhby Tula* 1939, No. 7-8, 80-5; *Khim. Referat. Zhur.* 1939, No. 12, 1001-1002. The dielectric Micalex, which is used in radio technique, is heat-resistant and possesses a high mech. strength and has low dielec. loss. The improved Micalex is made of mica and lead-free glass. This glass is easily fusible and has satisfactory moisture resistance. It contains an increased amt. of oxides of the 2nd-group elements and a smaller amt. of  $H_2O$ . The soly. of the glass (detd. by boiling its finely dispersed powder for 2.5-5 hrs. with 20% sol. of water) is 3%. Micalex contains 1.5% of this glass. At radio frequencies  $\tan \delta$  (angle of dielec. loss) is 0.0024-0.0030, after the Micalex has remained in water for 24 hrs.  $\tan \delta$  is 0.0030-0.0040, dielec. permeability ( $\epsilon$ ) 7.5, sp. surface resistance  $10^{10}$ - $10^{11}$  ohm-cm., sp. vol. resistance at 20-5°  $10^{10}$ - $10^{11}$  ohm-cm., sp. gr. 2.8-2.9, coeff. of linear expansion  $9 \times 10^{-6}$ , resistance to bending 1000-1200 kg./sq. cm., impact strength 4-5 kg.-cm./sq. cm. A sharp increase of the elec. cond. was observed at a relative humidity of 60-70%. High pressures and temps. are necessary for the production of high-grade Micalex.

W. R. Henn

AS 564 METALLURGICAL LITERATURE CLASSIFICATION

19

CA

Porcelains of low dielectric loss. N. N. Bogoroditskii and I. E. Fridberg. Russ. 57,614, July 31, 1960. Into the porcelain mass is incorporated 10-15% of heavy oxides, e. g.,  $\text{BaO}$ , in the form of an easily dissociating salt.

ASB. 31A METALLURGICAL LITERATURE CLASSIFICATION

ASB. 31A	ASB. 31B	ASB. 31C	ASB. 31D	ASB. 31E	ASB. 31F	ASB. 31G	ASB. 31H	ASB. 31I	ASB. 31J	ASB. 31K	ASB. 31L	ASB. 31M	ASB. 31N	ASB. 31O	ASB. 31P	ASB. 31Q	ASB. 31R	ASB. 31S	ASB. 31T	ASB. 31U	ASB. 31V	ASB. 31W	ASB. 31X	ASB. 31Y	ASB. 31Z

1ST AND 2ND COPIES										3RD AND 4TH COPIES									
PROCESSES AND PROPERTIES INDEX																			
CA																			
<p>Electric resistor. N. P. Bogoroditskii and I. D. Frid-                      berg. U.S.S.R. 64,640, July 31, 1948. The resistor is                      made from a mixt. of very finely ground graphite or C black                      with clay. M. Honeh</p>																			
ASB-5.4 METALLURGICAL LITERATURE CLASSIFICATION										ESTIMATED WEIGHT									
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FRIDBERG,,I..D.

BOGORODITSKY, N. P. ✓ FRIDBERG, I. D.  
H. F. inorganic dielectics

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FRIDBERG, I.D.

1A 12/1971

USSR/Academy of Sciences

May/June 49

"New Books" 1 p

"Radiotekh" Vol IV, No 3

Lists five books: P. V. Chmakov's "Color Television," M. V. Belakov's "The Influence of Meteorological Conditions on the Propagation of Ultrashort Waves," G. A. Remez's "Radio Testing," G. Khol'man's "Generation and Amplification of Decimeter and Centimeter Waves," and N. P. Bogoroditskiy and I. D. Fridberg's "High Frequency Inorganic Dielectrics."



FRIDBERG, I. D.

USSR/Electricity - Ceramics

May 51

"Ceramic Materials and the Properties of Ionic Crystals," N. P. Bogoroditskiy, Dr Tech Sci, I. D. Fridberg, Cand Tech Sci, both of Leningrad

"Elektrichestvo" No 5, pp 52-56

Classifies materials on the basis of the elec properties of the cryst phase. Shows elec properties of ceramics should be examd in connection with the properties of polycryst dielectrics and polycryst electron semiconductors. Gives characteristics and photographs of high-quality ceramic capacitors and insulators. Submitted 29 Jul 50.

189T26

USSR/Chemical Technology - Chemical Products and Their Application. Silicates.  
Glass. Ceramics. Binders, T-9

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62298

Author: Bogorochitskiy, N. P., Fridberg, I. D.

Institution: None

Title: Dielectric Losses in High-Frequency Ceramics

Original

Periodical: Zh. tekhn fiziki, 1954, 24, No 7, 1194-1204

Abstract: Considered is the mechanism of dielectric losses in ceramic materials. In the composition of ceramics (C) it is necessary to differentiate crystalline, glassy and gaseous phases. Crystalline phase consists of definite chemical compounds and their solid solutions. Its properties determine those of the C. Amount of glassy and gaseous phase are determined by the technological process. The basic mechanism of dielectric losses in C at high frequencies are ionic relaxation losses which depend upon the nature of packing of ions in the lattice. There is given a classification of crystals,

Card 1/3

USSR/Chemical Technology - Chemical Products and Their Application. Silicates.  
Glass. Ceramics. Binders, I-9

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62298

Abstract: dependence of  $\text{tg}\delta$  on firing conditions of titanium-zirconium C. In a reducing medium lower oxides of Ti are formed which have semiconductor properties and affect detrimentally the electric properties of C. Sealed pores in C bring about dielectric losses the source of which is an ionization of gas in the pores within a high voltage field of high frequency. Dielectric losses of throughout conductivity occur mostly in the presence of a moisture film or soiled surface and are of importance at high operation temperature. Materials having seignette-electric properties show high losses below the Curie point. A summary is presented of all the considered mechanisms of losses in C.

Card 3/3

AID P - 2818

Subject : USSR/Electricity

Card 1/2 Pub. 27 - 7/30

Authors : Bogoroditskiy, N. P., Doc. of Tech. Sci., Prof., and  
I. D. Fridberg, Kand. of Tech. Sci., Leningrad

Title : New developments in low voltage ceramic capacitors

Periodical : Elektrichestvo, 6, 37-43, Je 1955

Abstract : New structures of ceramic capacitors calculated for  
increased operational requirements are developed in  
the USSR by a group of researchers consisting of:  
V.I. Zhukovskiy, D.G. Dykman, N.Ye. Zarembo, I. Ye.  
Zelenkova, B.A. Kulik, K.Ye. Lisker, M.I. Neyman,  
O.K. Orfinskaya, N.P. Trukhina, A.A. Tyul'panov,  
N.A. Fryazinovskaya, Ya.K. Khakhankina, and N.M.  
Tsvetkov. The investigations of stability of the  
electric characteristics of ceramic capacitors shows  
that the selection of the minimum thickness of the

AID P - 2818

Elektrichestvo, 6, 37-43, Je 1955

Card 2/2 Pub. 27 - 7/30

wall and, consequently, of capacitance, depends not only upon permissible field intensity under normal conditions, but also on several operational requirements (temperature, humidity, mechanical influences, atmospheric pressure, operational voltage, and current frequency). The influence of unexpected changes in capacitor impedance, called the "flicker effect" is discussed in detail. The authors present in tabulated form the basic characteristics of several types of ceramic capacitors (KDV-1 to 5; KTN-1 to 6; KPS-1 to 4; KDK, KTK, KP, KPS). Four tables, 8 diagrams, 3 drawings, 2 references (1 Soviet) (1946-1953).

Institution : None

Submitted : Ja 11, 1955

FRIDBERG, I. D.

2229. The oxides of titanium.—N. P. BOGOMOLSEV, I. E. ZELENSKOYA, V. G. POKH-  
VAYLOV, and I. D. FRIDBERG. *Doklady Akad. Nauk S.S.S.R.*, 184, 593, 1955; from  
*Chem. Abstr.*, 50, 7446 (1956). The titanates of Mg, Ca, Zn, Sr, Ba, Al, Zr, Pb, Fe, and  
Ni are of particular interest because of their high dielectric constants. The following  
systems were investigated:  $\text{AlO}-\text{SiO}_2-\text{TiO}_2$  and  $\text{AlO}-\text{Al}_2\text{O}_3-\text{TiO}_2$  (Al—the above  
metals) by synthetic methods of solid-state reactions in the range 1,200° to 1,450°.  
The ceramic bodies (shaped as discs) were measured in their dielectric constants  $\epsilon'$  and  $\tan \delta$  (loss angle).

New compounds found were:  $\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{TiO}_2$ ;  $\text{BaO} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{TiO}_2$ ;  $\text{BaO} \cdot \text{SiO}_2 \cdot \text{TiO}_2$ . The complex titanate  $\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{TiO}_2$  has a negative  
temperature coefficient of the dielectric constant like rutile. The Ba sphere,  
 $\text{BaO} \cdot \text{SiO}_2 \cdot \text{TiO}_2$ , has a fusion point of only about 1,200° and can therefore be used as a  
flux for ceramic materials used in radio techniques. A chemical classification of the  
titanates is as follows: metatitanates,  $\text{MTiO}_3$ ; dititanates,  $\text{MO} \cdot 2\text{TiO}_2$ ; orthotitanates,  
 $2\text{MO} \cdot \text{TiO}_2$ ; silicotitanates like ramsdellite, sphene, Ba sphene, hemiteite, leucospheneite,  
etc.; aluminotitanates, e.g.  $\text{Al}_2\text{O}_3 \cdot \text{TiO}_2$ ;  $\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{TiO}_2$ ;  $\text{BaO} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{TiO}_2$ .

FRIEDBERG, I.D.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1380  
 AUTHOR BOGORODISKIJ, N.P., FRIEDBERG, I.D.  
 TITLE On the Character of the Temperature Dependence of Dielectric  
 Losses on the Occasion of Polarizations of Ion Compounds.  
 PERIODICAL Zhurn.techn.fis, 26, fasc. 9, 1884-1889 (1956)  
 Issued: 10 / 1956, reviewed: 10 / 1956

The dielectric losses of a number of simple borate- and silicate glasses as well as of the qualitatively superior types of high frequency ceramics were recently investigated. Among them were pure boron anhydride, boron sodium glasses at different conditions of  $B_2O_3$  and  $Na_2O$ , boron-barium glasses, silicate-lead glasses,

and ceramic substances such as radio porcelain, steatite, ultraporcelain, and spinell ceramics. Silver and ground silver disks were used as electrodes. The dielectric losses at radio frequencies were measured by the method of the modification of reactance.

The curve of  $tg\delta$  plotted in dependence of the temperature for the boron glass has a considerably lower value than is stated in literature. These curves for boron-barium and boron alkaline glasses are marked by a visible increase of losses within that range of temperature in which previously this dependence was by mistake not noticed. Also in the case of silicate glasses it was not possible to prove that  $tg\delta$  is independent of temperature. On the occasion of the investigation of ceramic substances no temperature domain in which losses do not depend on temperature was found to exist. It may be said in a general way that within a

Žurn.techn.fis, 26, fasc.9, 1884-1889 (1956) CARD 2 / 2 PA - 1380

- wide temperature- and frequency range on the occasion of the polarization of ion compounds dielectric losses are due to one and the same phenomenon, namely to the disturbance of the heat motion of ions under the influence of the electric field, which is all the more marked the more the period of the electric field and the relaxation time of the particles are in agreement.

Dielectric losses may essentially be said to be caused by the following physical processes:

- 1.) Relaxation during polarization, a phenomenon which is connected with the heat motion of the particles and which occurs at low frequencies, radiofrequencies, and ultrahigh frequencies.
- 2.) Relaxation in connection with electroconductivity, which is also due to the heat motion of particles.
- 3.) The phenomenon of the ionization of substances, which manifests itself in electric fields of higher voltages.

INSTITUTION:



FRIDBERG, I-D.

15(2); 24(2)

PHASE I BOOK EXPLOITATION

SOV/2007

Bogoroditskiy, Nikolay Petrovich, and Ilariy Dmitriyevich Fridberg

Elektrofizicheskiye osnovy vysokochastotnoy keramiki (Electrical and Physical Principles of High-frequency Ceramics) Moscow, Gosenergoizdat, 1958. 191 p. 5,000 copies printed.

Ed.: V.V. Pasyukov; Tech. Ed.: Ye.M. Soboleva.

PURPOSE: This book is intended for engineers, researchers and technicians dealing with the production and construction of radio components and also for students specializing in this field in vtuzes.

COVERAGE: The authors explain the physical phenomena occurring in dielectrics and semiconductors, especially in radio ceramics, the new high-frequency materials. They discuss the development and production of radio ceramics. They describe physical and chemical processes which accompany the forming of ceramic materials during production and phenomena observed in various high-frequency

Card 1/3

Electrical and Physical Principles (Cont.)

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ceramics subjected to an electric field. The authors pay special attention to the operations of producing radio ceramics. The book contains technical and experimental tables and graphs illustrating characteristics and properties of modern ceramic materials and radio components. The book represents a revised version of the book "High-frequency Inorganic Dielectrics" published by the same authors in 1948. In this new edition the authors attempt to summarize the results of 10 years of theoretical research, experimental investigation and production experience. The authors thank the members of the team which worked with them for many years in this field and also F.T. Ponomarev, Ye.A. Gaylish and V.I. Zhukovskiy. There are 89 references: 62 are Soviet, 18 English, 7 German and 2 French.

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Electrical and Physical Principles (Cont.)

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Card 3/3

FRIDBERG, I.D.

AUTHORS: Bogoroditskiy, N.P., Doctor of Technical Sciences, Fridberg, I.D., Candidate of Technical Sciences (Leningrad) 105-58-5-18/28

TITLE: The Physical Processes in Electroceramics and Effective Means of Developing Them (Fizicheskiye protsessy v elektrokeramike i ratsional'nyye puti yeye razvitiya)

PERIODICAL: Elektrichestvo, 1958, Nr 5, pp. 72-78 (USSR)

ABSTRACT: A table shows the basic categories and types of electrotechnical ceramics, and the basic properties of only the ceramics of electric insulation are investigated. It is shown that crystal formations can be subdivided into three types according to the ion-packing in the lattice. The majority of compounds is characterized by a dense ion packing in the lattice and by the electron character of electric conductivity. At the same time, these crystal formations differ according to the energetic spectrum of the forbidden zone. The narrower the band of the forbidden zone, the more do the admixtures of lead influence electric properties and the forming of crystals, and in some cases they even cause considerable deterioration. The 5 mechanisms of the through-going

Card 1/2

The Physical Processes in Electroceramics and Effective  
Means of Developing Them

105-58-5-18/28

electric conductivity of ion dielectrics, among them also those of electroceramics, are pointed out. Frequently they are superimposed. The experiments carried out by the authors showed that the character of the electric conductivity of ion-dielectrics in ceramics can often be determined in a simple manner by comparing the experimental dependence of the current on time in silver- and platinum- or gold electrodes. This method is based on the fact that, in the case of silver electrodes, a diffusion of silver into the ceramics is observed, whereas in the case of platinum electrodes this is hardly ever the case. A further table gives a classification of dielectric losses in electrotechnical ceramics. The latter table also gives the properties for ceramic working materials as laid down in GOST 5458-57. There are 3 figures, 5 tables, and 4 references, 3 of which are Soviet.

SUBMITTED: September 25, 1957

AVAILABLE: Library of Congress

Card 2/2

1. Insulation (Electric)--Properties
2. Ceramic materials--Electrical properties
3. Crystals--Lattices
4. Silver electrodes--Performance
5. Platinum electrodes--Performance

*FRIDBERG, I.D.*

**AUTHORS:**

Pisarenko, V. F., Balygin, I. Ye., 48-22-4-12/24  
Fedoseyev, G. P., Tonkonogov, M. P., Fridberg, I. D.,  
Tolpygo, K. B., Konorova, Ye. A., Skanavi, G. I.

**TITLE:**

Discussions on Lectures by: S. M. Bragin, G. A. Vorob'yev  
and A. A. Vorob'yev; L. A. Sorokina and Ye. A. Konorova;  
V. D. Kuchin; Ye. A. Konorova, V. V. Krasnopevtsev and G. I.  
Skanavi (Preniya po dokladam: S. M. Bragina; G. A. Vorob'yeva  
i A. A. Vorob'yeva; L. A. Sorokinoy i Ye. A. Konorovoy; V. D.  
Kuchina; Ye. A. Konorovoy, V. V. Krasnopevtseva i G. I.  
Skanavi)

**PERIODICAL:**

Izvestiya Akademii Nauk, SSSR Seriya Fizicheskaya, 1958,  
Vol. 22, Nr 4, pp. 413-414 (USSR)

**ABSTRACT:**

V. B. Pisarenko criticises the paper by G. A. Vorob'yev  
and A. A. Vorob'yev. He maintains, that in the investigation  
of the breakdown of colored rock salt the influence of space  
charge was not taken into consideration. I. Ye. Balygin  
maintains, that the experiments by Bragin are of great  
importance, as little research has hitherto been conducted  
in this field. In the lecture by Vorob'yev and Vorob'yev the  
division of breakdown into two stages was not sufficiently

Card 1/3

Discussions on Lectures by: S. M. Bragin, G. A. Vorob'yev 48-22-4-12/24  
and A. A. Vorob'yev; L. A. Sorokina and Ye. A. Konorova; V. D. Kuchin;  
Ye. A. Konorova, V. V. Krasnopevtsev and G. I. Skanavi

proved. He considers the method by Sorokina to be unreliable. G. P. Fedoseyev states with respect to the lecture by Bragin: The results are to be considered of great practical interest. The investigation, however, is incomplete and therefore cannot be recommended for practical technology. M. P. Tonkonogov considers the lecture by Bragin as valuable for the clarification of the interconnection between the phenomena of dielectric losses and the phenomena of breakdown. I. D. Fridberg discusses the lecture by Bragin and communicates his own experience in this field. K. B. Tolpygo contests the results communicated in the lecture by Krasnopevtsev, Konorova and Skanavi. Ye. A. Konorova answers Balygin and states, that an overlapping of samples was impossible. Methodical modification in comparison to the thirties are represented by an employment of qualitatively better samples, purer raw materials and of a previous treatment as well as by the fact, that the measurements of breakdown voltage are conducted more accurately. G. I. Skanavi comments on the lecture by Vorob'yev and Vorob'yev and states that the attempt to obtain data on the second stage of

Card 2/3

Discussions on Lectures by: S. M. Bragin, G. A. Vorob'yev 48-22-4-12/24  
and A. A. Vorob'yev; L. A. Sorokina and Ye. A. Konorova; V. D. Kichin;  
Ye. A. Konorova, V. V. Krasnopevtsev and G. I. Skanavi

breakdown proves to be of interest. The apprehensions of the  
authors regarding this problem are to be noticed. Subsequently  
he deals with some experiments of his own.  
There is 1 figure.

AVAILABLE: Library of Congress

1. Scientific reports--Critic

Card 3/3



AUTHORS: Bogoroditskiy, M. P., Volokobinskiy, SOV/20-120-3-13/67  
Yu. M., Fridberg, I. D.

TITLE: The Electric Properties of a Dielectric With a Variable Number of Relaxers (Elektricheskiye svoystva dielektrika s peremennym chislom relaksatorov)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 120, Nr 3, pp. 487-490 (USSR)

ABSTRACT: The various conditions of the dependence of the amount of relaxation polarization on the time necessary for it to commence are discussed first. If the field in the dielectric changes sinusoidally with the circuit frequency as time progresses, the dielectricity constant  $\epsilon$  may for a given frequency be less than that which the dielectric would have in a constant field. An expression is given for the frequency at which the dependence of  $\text{tg}\delta$  upon  $\omega$  has a maximum. The relaxation time  $\tau$  is assumed exponentially to depend on the temperature. The voluminous experimental material available shows that the temperature maximum of  $\text{tg}\delta$ , which is predicted by the theory, can in some cases not be determined experimentally. The discrepancy between theory and experiment mentioned in this paper is due to the simplifying assumption that the number of relaxers is independent of temperature. However, experimental data favor an increased number of

Card 1/3

The Electric Properties of a Dielectric With a  
Variable Number of Relaxers

SOV/20-120-3-13/67

relaxers in the case of a temperature increase. According to Skanavi (Ref 1) the ions are in a "consolidated" state at low temperature, from which state they can be liberated when the dielectric is heated. The authors here investigate the case in which the number of relaxers increases with rising temperature. First, it is assumed that the dependence of relaxation polarization  $P$  on the temperature  $T$  in a constant field is determined by the formula  $P = P_0 e^{-U/kT}$ . Here  $U$  denotes the relaxation energy of the relaxer and  $P_0$  - a constant. The aforementioned assumption is replaced by the more complete assumption  $\kappa = \kappa_0 e^{-U/kT}$ , where  $\kappa_0$  denotes a constant. If the number of relaxers increases with rising temperature, the temperature maximum of  $\text{tg}\delta$  is found to occur at a higher temperature than if the number of relaxers is constant. In some cases the reduction of the number of relaxers with increased temperature may have the following consequences: a) Increase of the dielectric constant in the case of rising temperature. b) Lacking maximum of  $\text{tg}\delta$  during the course taken by the temperature  $\text{tg}\delta$ . c) Increase of the maximum of  $\text{tg}\delta$  during

Card 2/3

The Electric Properties of a Dielectric With a  
Variable Number of Relaxers

SOV/20-120-3-13/67

the course taken by the temperature of  $\text{tg}\delta$  in the case of an increase of frequency. There are 5 references, 5 of which are Soviet.

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut im.V.I.Ul'yanova  
(Lenina)(Leningrad Institute of Electrical Engineering imeni  
V.I.Ul'yanov (Lenin))

PRESENTED: February 20, 1958, by A.F.Ioffe, Member, Academy of Sciences,  
USSR

SUBMITTED: February 18, 1958

1. Dielectrics--Electrical properties    2. Dielectrics--Temperature  
factors    3. Dielectrics--Polarization    4. Mathematics--Applications

Card 3/3

24(6)  
AUTHORS:

Bogoroditskiy, N. P., Kulik, B. A.,  
Fridberg, I. D.

SOV/57-28-10-10/40

TITLE:

Dielectric Losses Connected With the Structure of Ionic  
Crystals and Their Mixtures ( Dielektricheskiye poteri v  
svyazi so strukturoy ionnykh kristallov i ikh smesey)

PERIODICAL:

Zhurnal tekhnicheskoy fiziki, Vol 28, Nr 10,  
pp 2165 - 2172 (USSR)

ABSTRACT:

This paper is limited to an investigation of the  
component of the dielectric losses which is caused  
by ions. The authors are of opinion that it is more  
correct to connect the dielectric losses directly  
with the crystallochemical features of the crystal lattice,  
even the more as the lattice energy is determined by  
just these peculiarities. (This replaces the conception  
used in papers coming from the Tomskiy politekhnicheskiiy  
institut (Tomsk Polytechnical Institute), of uniquely  
connecting the dielectric losses with the lattice energy).  
The purpose of this study was to investigate the di-

Card 1/3

Dielectric Losses Connected With the Structure of  
Ionic Crystals and Their Mixtures

SOV/57-28-10-10/40

electric losses of a number, as great as possible, of alkali-halide crystals, giving special importance to a series of compounds not investigated in the papers cited by references 1,2, and 3. Mixtures of alkali-halide crystals were also included in the work and their properties were compared with those of several silicate- and titanium- containing systems. Summary: 1) The nature of the  $\text{tg } \delta$  versus concentration, versus temperature and frequency, and versus time functions may be regarded to constitute one of the criteria serving in the estimation of the interaction of components and of structural transformations of the system. 2) When polarization by ionic relaxation is considered the dielectric losses are determined by the defects in the crystal lattice. These defects are not taken into account by the formula for the lattice energy. Hence  $\text{tg } \delta$  in a great number of alkali halide crystals does not correspond to the lattice energies. 3) The processes of formation and of decomposition of solid solutions of ionic crystals are one of the

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Dielectric Losses Connected With the Structure of  
Ionic Crystals and Their Mixtures

SOV/57-28-10-10/40

**causes of**      Instability of the properties of technical  
dielectrics. There are 9 figures, 3 tables, and 13  
references, 11 of which are Soviet.

SUBMITTED:      May 5, 1958

Card 3/3

FRIEDBERG, I.D.

AUTHORS: Ponomarenko, P. T., Gaylish, Ye. A., S/105/60/000/04/025/024  
Kartynshov, K. I., Odelevskiy, V. I., 2007/3003  
Verbitskaya, T. M., Friedberg, I. D., Kanylov, V. Ye.,  
Verebychik, M. M., Zhukovskiy, V. I., Lisker, K. Ye.,  
Mikhaylov, M. M., Knyazev, T. S., et al.

TITLE: G. I. Shknavi

PERIODICAL: Elektrichestvo, 1960, Nr 4, p 94 (USSR)

TEXT: This is an obituary for Professor Georgiy Ivanovich Shknavi, scientist in the field of physics of dielectrics, who died on November 11, 1959. He graduated from the fiziko-mekhanicheskiy fakul'tet Leningradskogo politekhnicheskogo instituta (Department of Physics and Mechanics of the Leningrad Polytechnic Institute), and then worked at the "Elektrosila" Works in Leningrad. From 1935 to 1938 he worked at the Nauchno-Issledovatel'skiy Institut (Scientific Research Institute) as a team leader, and later as director of a scientific department. The mass production of ceramic radiotechnical capacitors was started in one of the works on his initiative and with his direct cooperation. He took his doctor's degree in 1946, and then became a professor. From 1940 until his death, he worked at the Fizicheskii Institut Akademii nauk SSSR (Physics Institute of the AS USSR), first under the direction of B. M. Val.

Card 1/2

Corresponding Member of the AS USSR, and later independently as Director of the Laboratory of the Physics of Dielectrics. From 1950 to 1958 he wrote the book "Fizika dielektrikov" ("Physics of Dielectrics"). He organized the Second All-Union Conference on the Physics of Dielectrics in November 1959. During the last years of his life he was teaching physics at Moskoverskiy universitet (Moscow University). He was Secretary of the VIM Party Organisation. There is 1 figure.

Card 2/2

PONOMARENKO, F.T.; GAYLISH, Ye.A.; MARTYUSHOV, K.I.; ODELEVSKIY, V.I.;  
VERBITSKAYA, T.N.; FRIDBERG, I.D.; MANOYLOV, V.Ye.; VEREBEYCHIK,  
N.M.; ZHUKOVSKIY, V.I.; LISKER, K.Ye.; MIKHAYLOV, M.M.; KNYAZEV, T.S.

Georgii Ivanovich Skanavi; obituary. *Elektrichestvo* no.4:94 Ap  
'60. (MIRA 14:4)

(Skanavi, Georgii Ivanovich, d. 1959)



5.4600 (A)  
24.2400

S/057/60/030/06/16/023 81595  
B012/B064

AUTHORS: Aleksandrov, L. A., Bogoroditskiy, N. P., Lisker, K. Ye.,  
Fridberg, I. D.

TITLE: On the Temperature Dependence<sup>1)</sup> of the Dielectric Constant<sup>2)</sup>  
of the Ion Dielectrics in a Wide Temperature Range

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol.30, No.6, pp.699-704

TEXT: With reference to the papers (Refs. 1, 2) investigations are described of a series of clear crystalline phases and their mixtures as applied in radio ceramics. The purpose of these investigations was to obtain further data on the character of the temperature dependence of the temperature coefficient  $TK\epsilon$  of the dielectric constant in a wide temperature range. The ceramics which were investigated are listed and the production of the samples and the mode of the experiments is described. Since in many dielectrics  $\epsilon$  varies strongly with temperature,  $TK\epsilon$  was calculated in every case for a narrow range of temperature of  $15 \pm 20^\circ\text{C}$ . This coefficient has the symbols  $TK\epsilon_d$  ( $d$  - differential). The data obtained by the experiment are given and discussed. Fig. 2 gives the temperature dependences of the

Card 1/2

On the Temperature Dependence of the  
Dielectric Constant of the Ion Dielectrics  
in a Wide Temperature Range

S/057/60/030/06/16/023 81595  
B012/B064

investigated compounds in the range of  $(-150) + (+150)^{\circ}\text{C}$ . It is seen that for most of the ion dielectrics (polycrystalline ceramics, glasses, mica)  $\text{TK}\epsilon_d$  decreases with a drop in temperature, but in some cases (calcium stannate, calcium zirconate) a minimum of  $\text{TK}\epsilon_d$  is observed. Those dielectrics in which  $\text{TK}\epsilon$  is subject to a particularly strong change (up to 2.5 - 3 times) can be divided into two groups. These are explained in detail. On the basis of the investigations made it can be assumed that in the various ceramic dielectrics a relaxation polarization at low temperatures exists, i.e., in ceramic dielectrics with and without titanate dioxide. The paper by V. A. Ioffe (Ref. 6) is mentioned. There are 7 figures and 6 references: 3 Soviet and 3 English.

SUBMITTED: December 18, 1959

Card 2/2



33130

9, 2110 (1001, 1153, 1385)

S/105/61/000/012/004/006  
E194/E455

AUTHORS: Bogoroditskiy, N.P., Doctor of Technical Sciences,  
Professor; Volokobinskiy, Yu.M., Candidate of  
Technical Sciences, Docent; Fridberg, I.D.,  
Candidate of Technical Sciences

TITLE: A semi-graphical method of calculating the thermal  
breakdown voltage of high-frequency insulators

PERIODICAL: Elektrichestvo, no.12, 1961, 63-68

TEXT: A semi-graphical method is proposed to overcome the  
mathematical difficulties of calculating the thermal breakdown  
voltage of insulators and capacitors, particularly ceramics. It  
is assumed that  $K$  (the thermal conductivity of the dielectric),  
 $\epsilon$  (its permittivity) and  $\tan \delta$  are given as simple functions of  
coordinates and temperature. In many practical cases the  
insulator can be represented as a sheet of material with a uniform  
electric field applied parallel to a face of the sheet. One side  
of the sheet is ideally thermally insulated and the other is  
exposed to air, so that heat flow is perpendicular to the  
surface and to the electric fields. An element of unit surface  
area within the insulator is considered. An expression is derived  
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33130

S/105/61/000/012/004/006

E194/E455

A semi-graphical method of ...

for the heat evolved in this element and it is equated to an expression for the heat dissipated from the outer surface of the element in contact with air. A graph is plotted (Fig.4) of  $\eta$  as a function of temperature, where  $\eta$  differs from the electrical conductivity of the material by a constant factor and is given by the expression

$$\eta = \frac{\epsilon t g \delta f}{1.8 \cdot 10^{+6}} \quad (\text{W/cm kV}^2) \quad (18)$$

where  $f$  is the frequency. From a point in the abscissus corresponding to ambient air temperature  $T_A$ , a tangent is drawn to intersect the curve at the point  $T^*$ . Then the temperature of the hottest point in the element at the instant of breakdown lies between  $T^*$  and  $T^{**}$  where  $\psi = T^* - T_A$ ;  $\theta = (\lambda/K)D$  ( $\lambda$  - external heat transfer coefficient;  $D$  - thickness).

A graph is then plotted of surface temperature  $T_n$  as a function of applied field strength  $E$  to find the point on the curve corresponding to the maximum surface temperature  $T_{nnp}$  (see Fig.5). Then the maximum surface temperature at breakdown  $T_{nnp}$  is

Card 2/4

33130

S/105/61/000/012/004/006

E194/E455

A semi-graphical method of ...

calculated within certain limits in a manner similar to that used to determine the maximum temperature in the specimen. The temperature difference between the hottest spot and the surface can then be determined within certain limits. The heat dissipated from unit surface at a voltage near to breakdown is found and then the electric field strength is determined that causes this amount of heat to be evolved, which is the value required to be found. The method can be applied to insulators that are air-cooled on both sides by considering them to be of half thickness; it can also be applied to cylindrical ceramic insulators in a uniform field provided the radius is great compared with the wall thickness. Its application to more difficult cases is discussed. A worked example on a simple case shows that the accuracy suffices for practical purposes. A number of general conclusions are drawn about the relationship between the variables involved in cases of thermal breakdown of this kind. M.I. Mantrov

is mentioned in the article in connection with his contributions in this field. There are 6 figures and 11 references - all Soviet-bloc.

Card 3/4

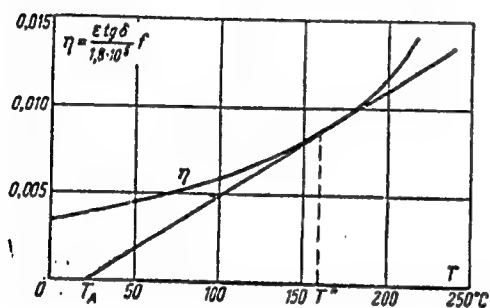
33130

A semi-graphical method of ...

S/105/61/000/012/004/006  
E194/E455

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut  
im. V.I.Ul'yanova (Lenina)  
(Leningrad Electrotechnical Institute  
im. V.I.Ul'yanov (Lenin))

SUBMITTED: August 11, 1961



Card 4/4

Fig. 4.

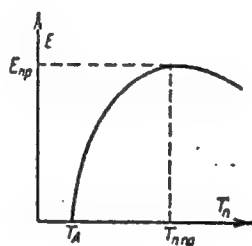


Fig. 5.

S/181/62/004/009/011/045  
B108/B186

AUTHORS: Bogoroditskiy, N. P., Mityureva, I. A., and Fridberg, I. D.

TITLE: Effect of the covalent bond in a titanium dioxide crystal on the magnitude of its dielectric constant

PERIODICAL: Fizika tverdogo tela, v. 4, no. 9, 1962, 2393 - 2396

TEXT: The rutile type crystals  $TiO_2$  and  $SnO_2$  are studied, the first mentioned having a highly anisotropic dielectric constant. The arrangement of the nearest neighbors of Ti and Sn in the lattice and their electron configurations show that there is a plane covalent bond in  $TiO_2$  but not in  $SnO_2$ . A model of polarization is proposed for  $TiO_2$  in which the elastic forces do not shorten the interionic distance (below 1.944 Å) in the Ti-O bond when an external field is applied. This is due to the covalent bond. The O-O bonds, however, are expanded within each molecule, which leads to a displacement of the  $\begin{matrix} Ti \\ / \backslash \\ O-O \end{matrix}$  group as a whole. The anisotropy of the dielectric

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Effect of the covalent bond in...

S/181/62/004/009/011/045  
B108/B186

constant in  $\text{TiO}_2$  ( $\epsilon_{\parallel} = 173$ ,  $\epsilon_{\perp} = 89$ ) also is due to the covalent bond.  
There are 3 figures.

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut im. V. I. Ul'yanova  
(Lenina) (Leningrad Electrotechnical Institute imeni  
V. I. Ul'yanov (Lenin))

SUBMITTED: April 9, 1962

Card 2/2

BOGORODITSKIY, Nikolay Petrovich; KAL'MENS, Natan Vladimirovich;  
NEYMAN, Moisey Isakovich; POLYAKOVA, Natal'ya  
Lavrent'yevna; ROTENBERG, Boris Abovich; SALITRA,  
Dmitriy Borisovich; AFANAS'YEVA, Margarita Aleksandrovna;  
FRIDBERG, Illariy Dmitriyovich; Prinimala uchastiye  
MUDROLYUBOVA, L.P.; PASYNKOV, V.V., red.; ZHITNIKOVA, O.S.,  
tekhn. red.

[Ceramic materials in radio engineering] Radiokeramika. Mo-  
skva, Gosenergoizdat, 1963. 553 p. (MIRA 16:12)  
(Radio--Equipment and supplies)  
(Electric engineering--Materials)  
(Ceramic materials)

ACCESSION NR: AP4019824

S/0181/64/006/003/0680/0683

AUTHORS: Bogoroditskiy, N. P.; Fridberg, I. D.

TITLE: The electrical conductivity of solid dielectrics

SOURCE: Fizika tverdogo tela, v. 6, no. 3, 1964, 680-683

TOPIC TAGS: electric conductivity, dielectric, current carrier, solid state, crystal lattice

ABSTRACT: This is a survey of existing theories on the subject. The authors consider a classification of conductivity: first, conductivity not associated with formation of donor or acceptor centers in the lattice, embracing three classical types -- pure electron, cation-cation, and cation-anion; and, secondly, conductivity associated with the formation of donor or acceptor centers in the lattice, also embracing three types -- cation-electron, anion-electron, and cation-anion-electron. Each type is analyzed briefly. The authors note that one type is commonly superimposed on another, but that one is generally dominant, depending on the temperature. They conclude that a consideration of the facts -- the materials and environmental state -- permit the determination of the mechanism of conductivity in any specific instance.

Card 1/2

ACCESSION NR: AP4019824

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut im. V. I. Ul'yanova  
(Lenina) (Leningrad Electrical Engineering Institute)

SUBMITTED: 06Jul63

DATE ACQ: 31Mar64

ENCL: 00

SUB CODE: EM, SS

NO REF SOV: 007.

OTHER: 001

Card 2/2

ROGOBILITSKIY, N.I., doktor tekhn. nauk; FRILBERG, I.D., kand. tekhn. nauk

Dielectrics and problems of active components in radio electronics.  
Elektrichestvo no.9:23-30 S '64. (MIRA 17:10)

1. Leningradskiy elektrotekhnicheskiy institut imeni V.I'yanova  
(Leningrad).

BOGORODITSKY, N.P., doktor tekhn. nauk, prof.; FRIDBERG, I.D.,  
kand. tekhn. nauk

Progress in the field of electronics and dielectric ceramics.  
Elektrichestvo no.8:1-7 Ag '65. (MIRA 18:9)

1. Leningradskiy elektrotekhnicheskiy institut imeni V.I.  
Ul'yanova (Lenina).

L 52529-65 EWT(1)/EPA(s)-2/EWT(m)/EEC(t)/ENP(t)/ENP(b) Pt. 7 IJP(c) JD/X/33  
 ACCESSION NR: AE5010710 UR/0181/65/007/004/1051/1056 42  
 AUTHOR: Isupov, V. A.; Kraynik, N. K.; Fridberg, I. D.; Zelenkova, I. Ye. B

TITLE: Antiferromagnetic properties of ortho-vanadate  
 SOURCE: Fizika tverdogo tela, v. 7, no. 4, 1965, 1051-1056

TOPIC TAGS: lead orthovanadate, ferroelectricity, antiferroelectricity, dielectric constant, volume expansion

ABSTRACT: The dielectric properties and the thermal expansion of polycrystalline samples and single crystals of lead orthovanadate ( $Pb_2V_2O_8$ ) were investigated. The polycrystalline samples were made by a ceramic technology, and the single crystals were grown by slow cooling. The purpose of the investigation was to clarify the reasons for the abrupt changes in the dielectric constant and dimensions of the samples near 0 and 100C. The test results show that lead ortho-vanadate has antiferroelectric properties. By the same token, a new type of crystal structure, admitting of existence of both ferroelectricity and antiferroelectricity, has been found, and the possibility of ferroelectric phenomena in vanadates has been demonstrated. Both the antiferroelectric phase transition near 100C and the low-temperature phase transition are first-order transitions, and are accompa-

L 52529-65

ACCESSION NR: AP5010710

4  
nied by relatively small but abrupt changes in the dielectric constant and by very large deformations. Observation of the single crystals in polarized light perpendicular to the cleavage plane disclosed the presence of a twin structure which vanished near 100C upon heating. The high dielectric constant, its maximum near 100C, the absence of dielectric-hysteresis loops all lead to the conclusion that the phase transition at 100C is antiferroelectric. At room temperature, as follows from the character of its twin structure, lead ortho-vanadate has a lower degree of symmetry than rhombohedral or hexagonal. It is concluded that the presence of antiferroelectric properties in the substance points to the necessity of producing a more general criterion for the occurrence of the ferroelectric and antiferroelectric states. "The authors thank Doctor of Phys.-Mat. Sciences, Professor G. A. Smolenskiy for interest in the work, and Senior Laboratory Members L. V. Bunyayeva and L. G. Kononova for the part they took in the work." Orig. art. has: 3 figures.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors AN SSSR)

SUBMITTED: 29Sep64

NR REF SOV: 005

ENCU: 00

OTHER: 006

SUB CODE: EM,IC

Card 2/2 lla



BEL'KOVA, Ye.A.; FRIDBURG, I.M.

Device for boring sleeves of hydrolysis apparatus. Gidroliz.  
i lesokhim. prom. 14 no.5:23 '61. (MIRA 16:7)

1. Bobruyskiy gidroliznyy zavod.  
(Hydrolysis)

FRIDBERG/L

RUBINSHTEYN, Nikolay Leonidovich; BKHIN, P., red.; FRIDBERG, L., red.;  
MUKHIN, Yu., tekhn.red.

[Agriculture in Russia during the second half of the 18th century;  
a study in economic history] Sel'skoe khoziaistvo Rossii vo vtoroi  
polovine XVII v.; istoriko-ekonomicheskii ocherk. Moskva, Gos.izd-vo  
polit.lit-ry, 1957. 494 p. (MIRA 10:12)  
(Agriculture--History)

POGREBINSKIY, A.P., prof.; BOBOVICH, I.M., dots.; AVDAKOV, Yu.K., dots.; PAZHITNOVA, T.K., dots.; CHUNTULOV, V.T., dots.; POLYANSKIY, F.Ya., prof.; FRIDBERG, L.Ya., dots.; DOROSHENKO, V.V., dots.; TALYBEKOV, S.Ye., prof.; FADEYEV, A.V., prof.; AMINOV, A.M., prof.; BOROVOY, S.Ya., prof.; KONYAYEV, A.I., dots.; SHEMYAKIN, I.N., prof.; PONYATOVSKAYA, N.P., dots.; SARYCHEV, V.G., dots.; GOLUBNICHIIY, I.S., prof.; VOSKRESENSKAYA, T., red.; NEZNANOV, V., mlad. red.; MOSKVINA, R., tekhn. red.

[Economic history of the U.S.S.R.] Ekonomicheskaya istoriya SSSR. Moskva, Sotsekgiz, 1963. 509 p. (MIRA 17:2)

L 17961-63

EWT(1)/EWP(q)/EWT(m)/FCC(w)/BDS AFFTC/ASD/IJP(C) JD/JG

ACCESSION NR: AT3002104

S/2910/61/001/01-/0071/0079

AUTHORS: Fridberg, P.Sh.; Shugurov, V.K.

62

60

TITLE: Application of the unrestricted Hartree-Fok method to atoms of the type of Lithium and Boron

SOURCE: AN Lit SSR. Litovskiy fizicheskiy sbornik. v.1, no.1-2, 1961, 71-79

TOPIC TAGS: unrestricted Fok method, expanded Fok method, Hartree-Fok method, Lithium, Boron, wave function, matrix element, atomic energy, B, Li, atomic energy levels.

ABSTRACT: This theoretical paper describes an attempt to employ the so-called unrestricted or expanded Fok (Hartree-Fok) method, that is, an approximation in which each electron of a layer is assumed to have its own radial function, and to calculate the energy of atoms of the type of Li and B in the configurations  $2p^3$  and  $1s^2 2p^3$ , respectively. The construction of the wave function of an atom is discussed in the case when identical azimuthal quantum numbers are not encountered in a configuration. This is followed by a description of the calculation of a matrix element. Lastly, the authors use the numerical results and compare them with data obtained by other methods and also, wherever possible, experimentally.

Card 1/2

L 17961-63

ACCESSION NR: AT3002104

"The authors thank Prof. A. P. Yutsis for critical observations." Orig. art. has 20 numbered equations and formulas. 2

ASSOCIATION: Vil'nyusskiy gosudarstvennyy universitet imeni V. Kapsukasa  
(Vilnyus State University)

SUBMITTED: 27Mar61      DATE ACQ: 23Apr63      ENCL: 00

SUB CODE: MM, PH, EL. NO REF SOV: 005      OTHER: 004

Card 2/2

L 17982-63

EWI(1)/FCC(w)/BDS. AFFTC/ASD/ESD-3/IJP(C)

ACCESSION NR: AT3002105

S/2910/61/001/01-/0081/0088

AUTHORS: Fridberg, P. Sh., Shugurov, V. K.

59  
58

TITLE: Unrestricted Hartree-Fok method in the case of configurations containing equal azimuthal quantum numbers

SOURCE: AN Lit SSR. Litovskiy fizicheskiy sbornik. v.1, no.1-2, 1961, 81-88

TOPIC TAGS: unrestricted Fok method, expanded Fok method, Hartree-Fok method, wave function, matrix element, atomic energy, atomic energy level

ABSTRACT: This theoretical paper constitutes an expansion of the authors' paper published on p. 71-79 of the present sbornik (compendium), in which the wave function is constructed and the matrix elements calculated according to the unrestricted Hartree-Fok method for the case when in a configuration there are no shells with identical azimuthal quantum numbers. The present study generalizes the results of the antecedent paper to the case of configurations which have any azimuthal quantum numbers, when the  $k$  electrons of the shell  $l^k$  is divided into any number (from one to  $k$ ) of groups, each of which is described by its own radial function. The study devotes especial attention to the radial integrals, since the angular integration and the spinwise summation is performed in the same

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L 17982-63

ACCESSION NR: AT3002105

manner as in the ordinary method. The paper describes the construction of the wave function and the calculation of the matrix elements. A numerical example is completely developed for the case of the application of the above-constructed to obtain the energy expression of the configuration  $1s^2 2s^2$ . This configuration is frequently encountered in atomic calculations and is, therefore, explained in full detail. Orig. art. has 26 numbered equations and formulas.

ASSOCIATION: Vil'nyusskiy gosudarstvennyy universitet imeni V. Kapsukasa  
(Vilnyus State University)

SUBMITTED:	10May61	DATE ACQ:	23Apr63	ENCL:	00
SUB CODE:	PH, MM	NO REF SOV:	003	OTHER:	000

Card 2/2

ERINGIS, K.K.; FRIDBERG, P.Sh.; SHUGUROV, V.K.

Fock's method extended to multiconfigurational approximations  
for the helium atom. Opt. i spektr. 11 no.3:297-300 S '61.

(MIRA 14:9)

(Helium) (Quantum theory)



42727

S/109/62/007/011/004/012  
D266/D308

6.4700

AUTHORS:

Fel, S.S., Fridberg, P.Sh. and Levinson, I.B.

TITLE:

Theory of broad-band non-returning echo-cavities of spherical shape

PERIODICAL:

Radiotekhnika i elektronika, v. 7, no. 11,  
1962, 1916 - 1921

TEXT:

The purpose of the paper is to show theoretically that spherical echo cavities are superior to cylindrical ones. If the wavelength is comparable with the radius of the sphere then the tuning of a spherical resonator is difficult. If, however, the radius is considerably larger than the wavelength no tuning is necessary. Further advantages are that no frequency bands are missing, no spurious resonance (degenerate modes) are possible and the Q depends only slightly on the mode of resonance. The frequency difference between two neighbouring resonances is taken from L.D. Landau and Ye.M. Lifshitz's book (Teoriya polya [Field theory], GIFML, 1960). The Q of the resonators is calculated using the approximate leontovich

Card 1/3

Theory of broad-band ...

S/109/62/007/011/004/012  
D266/D308

boundary conditions. The result for the electric modes is

$$Q_{el} = \frac{R}{\delta} \left( 1 - \frac{n(n+1)}{\left( \gamma_1^n + \frac{1}{2} \right)^2} \right) \quad (22)$$

where R - radius of the sphere,  $\delta$  - skin depth, n - mode number,  
 $\gamma$  - root of the transcendental equation

$$n J_{n+\frac{1}{2}}(\gamma) = \gamma J_{n-\frac{1}{2}}(\gamma) \quad (6)$$

It can be shown that the change in  $Q_{el}$  is small and in practical application would not exceed 20%. For magnetic modes

$$Q_{mag} = \frac{R}{\delta} \quad (27)$$

independently of the mode number. In the frequency band  $10^4 - 4 \cdot 10^4$  Mc/s

Card 2/3

Theory of broad-band ...

S/109/62/007/011/004/012  
D266/D308

for  $R = 15$  cm and  $\sigma = 5.5 \times 10^{17}$  (corresponding to silver)  
Q varies from  $2.3 \times 10^5$  to  $4.6 \times 10^5$

SUBMITTED: January 6, 1962

X

Card 3/3

S/056/62/043/005/057/067  
B102/B186

AUTHORS: Fridberg, P. Sh., Shugurov, V. K.

TITLE: To the problem of calculating the diamagnetic susceptibility of helium

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 6(12), 1962, 2308

TEXT: Though Damburg and Iolin (ZhETF, 42, 820, 1962) have calculated the mean square radius  $\overline{r^2}$  for the electron in the helium ground state with extremely high accuracy (80 variation parameters) their result (1.1935 at.un.) deviates greatly from experiment ( $1.220 \pm 0.006$ ). The authors used here a modified Fokymethod (DAN SSSR, 135, 809, 1960) and functions taken from Trudy AN LitSSR, B4, 27, 1959 and Optika i spektroskopiya, 11, 297, 1961, to calculate  $\overline{r^2}$  in threeconfiguration approximation (5 variation parameters). They obtained

	$1s^2$	$1s^2, 2p^2$	$1s^2, 2s^2$	$1s^2, 2s^2, 2p^2$
$\overline{r^2}$ :	1.233	1.233	1.207	1.208

Card 1/2

To the problem of calculating the...

S/056/62/043/006/057/067  
B102/B186

Agreement with experiment is good and can be further improved by about  
0.005 if the contributions of the configurations  $3s^2$ ,  $3p^2$ ,  $3d^2$  are taken  
into account. ✓

SUBMITTED: August 20, 1962

Card 2/2

LEVINSON, I.B.; FEL, S.S.; FRIDBERG, P.Sh.

Integral equation for the aperture field in the case when two  
volumes are connected electromagnetically. Dokl. AN SSSR 153  
no.2:310-312 N '63. (MIRA 16:12)

1. Predstavleno akademikom B.A.Vvedenskim.

L 14376-65 EWT(1)/EEG-4/EEG(t)/EEG(b)-2/FCS(k) Pac-4/Pac-2/Pi-4/Pj-4  
P1-4 AFNL/SSD/BSA/ASD(a)-5/AFETR/AFTC(b)/ESD(gb)/ESD(t) WR

ACCESSION NR: AP4047944

S/0020/64/158/005/1064/1067

AUTHORS: Levinson, I. B.; Fridberg, P. Sh.

TITLE: Electromagnetic coupling of two volumes through a narrow gap <sup>B</sup>

SOURCE: AN SSSR. Doklady\*, v. 158, no. 5, 1964, 1064-1067

TOPIC TAGS: slot resonator, slot antenna, resonator coupling,  
thin slot, thin dipole <sup>25B</sup>

ABSTRACT: Unlike in earlier investigations (e.g., A. F. Stevenson, J. Appl. Phys. v. 19, 1, 24, 1948), the slot coupling the two volumes is assumed to be simply narrow, and not exponentially narrow, so that the terms retained in the expansion of the kernel of the integral equation for the electric field are not only of order  $\ln d$  ( $d$  = width of slot), but of order unity. An iterational-variational method is presented for calculating the scattering matrix of the two

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L 14376-65

ACCESSION NR: AP4047944

3  
coupled volumes, in which the matrix elements can be determined without solving the integral equation for the field. The theory proposed is valid for both runed and untuned slots, and can be extended to include exponentially-thin and thin dipoles. "In conclusion the authors thank Ya. N. Fel'd and B. Z. Katsenelenbaum for a fruitful discussion of the work and to L. A. Vaynshteyn for interest in the work." This report was presented by B. A. Vvedenskiy. Orig. art. has: 13 formulas.

ASSOCIATION: None

SUBMITTED: 07Jul64

SUB CODE: EC

NR REF SOV: 003

ENCL: 00

OTHER: 004

Card 2/2



L 31289-65 EWT(1)/EEC-4/ENW(h) Feb

ACCESSION NR: AP5005342

S/0109/65/010/002/0260/0268

AUTHOR: Levinson, I. B.; Fridberg, P. Sh.

TITLE: Electromagnetic coupling of two cavities by means of a narrow slot

SOURCE: Radiotekhnika i elektronika, v. 10, no. 2, 1965, 260-268

TOPIC TAGS: slot coupling, waveguide slot *ps*

ABSTRACT: At variance with A. F. Stevenson's work (J. Appl. Phys., 1948, 19, 1, 24) where, in the solution of an integro-differential equation for the field in a slot between two (finite or infinite) cavities, the slot is assumed to be exponentially narrow ( $\ln(\lambda/d) \gg 1$ ,  $\ln(l/d) \gg 1$ ), the present article assumes the slot to be simply narrow ( $\lambda/d \gg 1$ ,  $l/d \gg 1$ ); in other words, not only the  $\ln(\lambda/d)$ -order but also the first-order terms are retained in an expansion of the kernel of the integral equation describing the slot field. The general nature of the narrow-slot integral equation is explored; formulas for determining the input admittance are

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ACCESSION NR: AP5005342

3

developed. A variational iteration method is suggested for setting up the matrix of dissipation of two cavities coupled by a slot. The final result is different in principle from the expansion in  $1/\ln(\lambda/d)$  or  $1/\ln(1/d)$  power as used by A. F. Stevenson and others. "In conclusion, the authors wish to thank Ya. N. Fel'd and B. Z. Katsenelenbaum for discussing the article, and L. A. Vaynshteyn for his attention to the work." Orig. art. has: 1 figure and 33 formulas.

ASSOCIATION: none

SUBMITTED: 12Mar64

ENCL: 00

SUB CODE: EC

NO REF SOV: 004

OTHER: 004

Card 2/2

L 22539-66 EWT(1)

ACC NR: AP6009422

SOURCE CODE: UR/0020/66/166/006/1335/1337

AUTHORS: Levinson, I. B.; Fridberg, P. Sh.

ORG: none

TITLE: Variational principle for the scattering matrix in the case of electromagnetic coupling between two volumes

SOURCE: AN SSSR. Doklady, v. 166, no. 6, 1966, 1335-1337

TOPIC TAGS: scattering matrix, waveguide coupling, scattering cross section, Green function, tensor, waveguide iris

ABSTRACT: The authors develop a variational principle for the scattering cross section on the basis of an integral equation which they have derived earlier (DAN, v. 153, no. 2, 310, 1963) as an extension of a more limited integral equation derived by H. Levine and J. Schwinger (Comm. Pure and Appl. Math. v. 3, 355, 1950). The electrodynamic properties of the volume are characterized by an affnor wave admittance between two elementary areas at different points, and by an affnor (tensor) Green's function with the standard boundary con-

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L 22539-66

ACC NR: AP6009422

3  
ditions for an ideal metal. The authors obtained first the connection between the wave admittance of a waveguide junction and the scattering matrix of this junction. This is then extended to a compound waveguide junction consisting of two junctions coupled through an aperture. The formulas obtained are valid also in the case when one of the junctions is a resonator or when its waveguides operate beyond cutoff. The procedure proposed can be used in those cases when the affinor Green's functions of the joined volumes (with metalized aperture) are known or can be obtained by some approximate method. The authors thank L. A. Vaynshteyn and Ya. N. Fel'd for a discussion of the work. This report was presented by Academician V. A. Fok. Orig. art. has: 2 figures and 12 formulas.

SUB CODE: 20/ SUBM DATE: 14Jun65/ ORIG REF: 002/ OTH REF: 002

Card 2/2 BkG

L 40357-66 ENT(1)

ACC NR: AP6014237

SOURCE CODE: UR/0109/66/011/005/0831/0838

AUTHOR: Levinson, I. B.; Fridberg, P. Sh.

ORG: none

35  
8

TITLE: Slot-type couplings of rectangular single-mode waveguides. Equivalent circuits and concentrated parameters

SOURCE: Radiotekhnika i elektronika, v. 11, no. 5, 1966, 831-838

TOPIC TAGS: waveguide, rectangular waveguide, waveguide element

ABSTRACT: Based on the works of A. F. Stevenson (J. Appl. Phys., 1948, 19, 1) and W. N. Watson ("Physical Principles....", Clarendon Press, Oxford, 1947) and later theoretical developments, a formula is derived for the input admittance of a waveguide slot which takes into account the geometry of the single-mode rectangular waveguide behind the slot. Various waveguides are considered having

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UDC: 621.372.831.4:621.372.822

L 40357-66

ACC NR: AP6014237

the same width and different heights coupled by means of narrow transverse slots that satisfy the condition  $\lambda/d \approx l/d \gg 1$ , but  $\ln(\lambda/d) \approx \ln(l/d) \approx 1$ , where  $\lambda$  is the wavelength;  $d$  and  $l$  are the slot width and length, respectively. Equivalent circuits are given for straight junction, T-junction, and parallel junction of two semi-infinite rectangular waveguides. Application of the variational method to determining the elements of a dispersion matrix and concentrated circuit parameters is shown. Orig. art. has: 6 figures and 25 formulas.

SUB CODE: 09 / SUBM DATE: 08Feb65 / ORIG REF: 009 / OTH REF: 004

Card

2/2

ACC NR: AP6018998

AUTHOR: Levinson, I. B.; Fridberg, P. Sh.

ORG: none

SOURCE CODE: UR/0109/66/011/006/1076/1085

TITLE: Slot junctions of rectangular single-mode <sup>15</sup> waveguides. Numerical results

SOURCE: Radiotekhnika i elektronika, v. 11, no. 6, 1966, 1076-1085

TOPIC TAGS: rectangular waveguide, waveguide junction, WAVE GUIDE IRIS

ABSTRACT: Design formulas are reported describing the components of an equivalent circuit which represents an infinite waveguide with a narrow cross slot in its wider wall and also represents a semi-infinite waveguide with a narrow cross slot in its end. Numerical results are presented for a concentrated parameter of the above equivalent circuits; they were calculated for iris and parallel junctions of rectangular waveguides for various lengths  $l$ , width  $d$ , and

Card 1/2

the  
Ladyzhe-  
I. L'yova."

SUB CODE: 09 / SUBM

UDC: 621.372.831.4

004





FRIDBERG, R.

16(1) PHASE I BOOK EXPLANATION 30V/2508

Matematicheskoye prosvetsheniye; Matematika, nye propovedaniye, prikloneniya i istoriya, vyp. 4 (Mathematical Education; Mathematics, its Teaching, Application and History, Nr. 4) Moscow, Gosizdat, 1959. 15,000 copies printed.

Ed.: I.M. Bronshteyn, Editorial Board of Series: I.M. Bronshteyn, A.I. Martushevich, M.M. Yaglom, Tech. Ed.: S.M. Akhmanov.

PURPOSE: This book is intended for persons without an extensive mathematical education who are interested in trends in contemporary mathematics. The book may be useful to high school mathematics teachers.

COVERAGE: The book consists of articles, reviews, and scientific and methodological reports, some of which are translations from other languages. The state of modern mathematics is covered, including applications, history, teaching of mathematics in schools, and mathematical developments in the USSR and abroad. One section deals with scientific and pedagogical life in the USSR and another contains reviews of certain mathematical publications. Some mathematical background is necessary to understand the book; certain articles require a knowledge of higher mathematics.

# Mathematical Education; (Cont.)

30V/2508

- Without the Use of Cardan Formulas 208
- McGill, I.M. Two Tests of Divisibility by Any Odd Number 209
- Not Ending in 5

## IV. SCIENTIFIC AND PEDAGOGICAL CHRONICLE

Kazhin, P.P. The 16th Conference of Mathematics Departments of Pedagogical Institutes in the Ural Region 213

Smolyanskiy, M.I. Meeting of Teachers of Correspondence Pedagogical Institutes of the USSR 219

Talaf, L.Ya. On the Joint Scientific-Methodological Seminar of the Mathematics Departments of Moscow Houses 227

Innovations in Mathematical Science 233

1. Muchnik, M.A., and R. Fridberg. The Problem of the Recursiveness of Enumerable Sets

Card 6/8

FRIDBERG, S. N.

USSR/Medicine - Roentgenology

FD 221

Card 1/1

Author : Tseytlin, A. A., Professor; Fridberg, S. N.

Title : Roentgenotherapy of acute post operational anastomosis

Periodical : Vest. Rent. i Rad. 82-85, Mar/Apr 1954

Abstract : Small doses of X-ray radiation are effective in acute post operational anastomosis.

Institution : X-ray Department (Chief - Honored Worker of Science Professor A. A. Tseytlin) Clinical Hospital No 33 imeni Ostroumova (Head Physician - P. V. Abashkina).

BAIABA, T.Ya. (Moskva B-64, Basmannyy tupik, d.6-a, kv.26); PETROVA, A.S.;  
GRUSHETSKAYA, G.Ye.; FRIDBERG, S.N.

Functional state of the blood coagulation system in patients with  
injuries to the locomotor apparatus. Ortop., travm. i protez. 25  
no.6:56-57 Je '64. (MIRA 18:3)

1. Iz TSentral'nogo instituta travmatologii i ortopedii (dir. - chlen-  
korrespondent AMN SSSR prof. M.V. Volkov).

KAPITONOV, I.P.; FRIDBURG, I.M.

Adapting ZIS-585 dump trucks for transporting raw materials for  
hydrolysis. Gidroliz.i lesekhim.prom. 9 no.6:25 '56. (MIRA 9:10)

1.Bobruyskiy gidroliznyy zavod.  
(Motortrucks)

FRIDBURG, V.I., inzhener.

Modern structural components for apartment houses. Nov.tekh.1  
pered.op.v stroi. vol. 19:13-18 Ag '57. (MIRA 10:10)  
(Apartment houses) (Building materials)

KAPLAN, Leyb Zusmanovich, inzh.; FRIDBURG, V.I., inzh., nauchnyy red.;  
SKVORTSOVA, I.P., red. izd-va; OSENKO, L.M., tekhn. red.

[Engineering preparation of the construction area] Inzhenernaia pod-  
gotovka territorii stroitel'stva. Moskva, Gos. izd-vo lit-ry po  
stroit., arkhitekt. i stroit. materialam, 1961. 154 p. (MIRA 14:7)  
(Building sites)

FRIDBERG, Ye.S.

Comparison analysis of the extension strain of rayon staple fiber  
and cotton. Izv. vys.ucheb.zav.; tekhn.tekst.prom. no.6:22-24 '61.  
(MIRA 15:1)

1. Ivanovskiy tekstil'nyy institut imeni M.V.Frunze.  
(Textile fibers--Testing) (Strains and stresses)

FRIDE, Yanis; OPALAJIS, V., red.

[Jelgava and its vicinity; guidebook for tourists] Jelgava un  
tas apkartne; turisma celvedis. Jelgava, LRAP Latvijas Republi-  
kaniska turisma - ekskursiju parvalde, LLKJS Jelgavas pilastas  
komiteja, 1960. 78 p. (MIRA 15:5)  
(Jelgava--Guidebooks)



PRID, 1.1.

Handbook on the control of malaria. Isl. 2., ser. 1.1. Moscow, 1971. 206 p. (Biblioteka obozrevaia meditsina)

FRIDE, O. A.

Fride, O. A. - Sputnik na khininizatora i bonifikatora. Prevel ot ruski T. Zakhariev. (Sofiya) Nauka i izkustvo (1952) 155 p. (Handbook for assistant physicians and entomologists engaged in the treatment of malaria. Tr. from the Russian. Illus.)

SO: Monthly List of East European Accessions, Library of Congress, Vol. 2, No. 9  
Oct. 1953, Uncl.

L 18122-63 EWP(q)/EWT(m)/BDS . AFFTC/ASD JD

ACCESSION NR: AP3003894

S/0181/63/005/007/1940/1945

AUTHORS: Fridel', I.; Kholuyanov, G. F.

TITLE: Emission of electrons from p-n junctions in SiC by the diffusion of nitrogen

SOURCE: Fizika tverdogo tela, v. 5, no. 7, 1963, 1940-1945

TOPIC TAGS: electron, emission, p-n junction, Si, C, N, diffusion, n-layer, microplasma, etching, emission factor, work function, "hot" electron

ABSTRACT: Emission of "hot" electrons was obtained from p-n junctions by diffusion of N in p-type SiC in the temperature range 20-400C. Preliminary etching of the initial crystal surfaces was used to obtain structures that contained considerable microplasma, able to emit electrons not only from the periphery of the p-n junction but also from regions some distance away. The authors examined the dependence of emission currents on the reverse current through p-n junctions and on the voltage across the samples. With no special coating to reduce the work function of electrons from the thin disturbed n-layer of a p-n junction, emission currents up to 300-330 microamps (20C) were obtained with an emission factor of  $(2-3) \cdot 10^{-4}$ . The authors conclude that p-n junctions may be considered potential sources of electrons, but that certain trends should be observed in improving these sources:

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ACCESSION NR: AP3003894

4  
1) lowering the work function, 2) careful examination of the problem relative to optimal thickness of the disturbed n-layer, and 3) lowering the operating voltage and obtaining more rigid volt-ampere characteristics in the region of breakdown. "In conclusion the authors express deep thanks to E. Ye. Violin for his active aid in preparing p-n junctions and in carrying out the experiment, and also to F. E. Reyfman for kindly furnishing samples of crystals." Orig. art. has: 4 figures.

14  
ASSOCIATION: Leningradskiy electro-tekhnicheskoy institut im. V. I. Ul'yanova (Leningrad) (Leningrad Electrical Engineering Institute)

SUBMITTED: 11Mar63

DATE ACQ: 15Aug63

ENCL: 00

SUB CODE: PH

NO REF SOV: 004

OTHER: 007

Card 2/2

FRIDEL, K.

"Gleba w naszym ogródku" (The soil in our garden), by K. Fridel. Reported  
in New Books (Nowe Książki), No. 13, July 1, 1955

FRIDEL', Yu.V.

BB Herculis. Per.zvezdy 13 no.4:303-305 Mr '61. (MIRA 15:3)

1. L'vovskaya astronomicheskaya observatoriya.  
(Stars, Variable)

FRIDEL', Yu.V.

Observations of BC Herculis. TSir. Astron. obser. L'viv. un.  
no.39/40:69-72 '63.

AQ Lyrae. 73-77

(MIRA 16:11)

L 29504-65 EWT(1)/EWG(7) Pe-5/Pe-4/Pq-4/Pac-4/Pae-2 GN

ACCESSION NR: AT5003587

S/2816/63/000/033/0003/0006

AUTHORS: Logvinenko, A. A.; Fridel', Yu. V.

TITLE: Automatic maintenance of time service

SOURCE: AN SSSR. Astronomicheskii sovet. Byulleten'stantsiy opticheskogo  
nablyudeniya iskusstvennykh sputnikov Zemli, no. 33, 1963, 3-6

TOPIC TAGS: time signal, automatic control/ 21 P printing chronograph

ABSTRACT: For reliable determination of observation time, it is necessary to tie in to the time service of a radio station at least four times (twice before and twice after the passage of a satellite). The authors describe a device that allows the oscillator and the printing mechanism of the chronograph to be turned on and precise time signals to be received without the aid of an operator. The device is designed to permit the switching in of a voltage regulator at a given time (1 hour and 46 minutes before the first tie-in). The output of this regulator is connected directly to the quartz oscillator and to some load ( $R_1$ ) equivalent to the power of the radio receiver, the pulse attachment, and the printing chronograph. For ten minutes before each tie-in, a feed to these three units is switched into the voltage regulator.

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L 29504-65

ACCESSION NR: AT5003587

within simultaneous switching in of the load ( $R_1$ ). For ten minutes before the first tie-in, the motor of the printing chronograph is switched into the system in combination with a load  $R_2$  (by this the motor is automatically moved from the dead point). Fifteen-second signals of the minutes 46-50 and 55-60 are fed to the chronograph. After the tie-in of the 15-second signals, the ribbon of the chronograph is re-stretched to a single interval. For the first tie-in, the feed to the radio receiver, pulse attachment, and printing chronograph is switched into the system in combination with the load  $R_1$ . The authors describe the principle of the device in considerable detail, and they conclude that it provides reliable automation. Orig. art. has: 1 figure.

ASSOCIATION: L'vovskaya astronomicheskaya observatoriya, stantsiya opticheskikh nablyudeniy (Lvov Astronomical Observatory, Station for Optical Observation)

SUBMITTED: 19Oct62

ENCL: 00

SUB. CODE: IE, DC

NO REF SOV: 000

OTHER: 000

Card 2/2

FRIDENBERG, A. E.

Magnetic dielectrics  
Metal powders

**DECEASED**

c. '63

1963

ACC NR: AP6033449

SOURCE: 11/13/1966/018/0032/0032

INVENTOR: Syrkin, V. G.; Tolmashiy, T. S.; Volkov, V. N.; Levinberg, A. E. (Deceased)

ORG: None

TITLE: A method for producing highly dispersed carbonyl iron powder. Class 12, No. 185864

SOURCE: Izobret prom obraz tov zn, no. 18, 1966, 32

TOPIC TAGS: carbonyl iron, iron powder, powder metal production

ABSTRACT: This Author's Certificate introduces a method for producing highly dispersed carbonyl iron powder by thermal dissociation of iron pentacarbonyl. The yield is increased and a product with a low degree of carburization is obtained by sectional inlet and outlet of the heating gas along the height of the equipment from top to bottom to produce "falling" temperature conditions.

SUB CODE: 11/ SUBM DATE: 09Sep61

13/

Card 1/1

UDC: 546.725.07

FRIDENBERG, E.O.

Case sediments of the western Caucasus. Biul. MOIP. Otd. geol.  
40 no. 6:153-154 '65 (MIRA 19:1)

1. Submitted May 7, 1965.